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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/582,982 07/10/00 ITOU

K 49657-742

EXAMINER

IM22/0824

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WASHINGTON DC 20005-3096

WILKINS III, H

ART UNIT

PAPER NUMBER

1742

DATE MAILED:

08/24/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.

09/582,982

Applicant(s)

ITOU ET AL.

Examiner

Harry D Wilkins, III

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1 and 2 are pending. The preliminary amendment under PCT Article 19 has been entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2 are rejected under 35 U.S.C. 103(a) as obvious over Nakamura et al (JP 02-054739 A) in view of Takata et al (US 4,642,219).

Nakamura et al teach (see English abstract) a bearing steel which contains, by weight, 0.45 to 0.7% C, 0.10 to 2.0% Si, 0.20 to 2.0% Mn, less than 0.015% P, less than 0.015% S, less than 2.0% Cr, less than 2.0% Ni, 0.015 to 0.060% Al, less than 0.002% Ti, less than 0.0015% O, 0.003 to 0.020% N and the balance iron.

The ranges of elements taught by Nakamura et al overlap the presently claimed ranges at 0.6 to 0.7% C, 0.5 to 2.0% Si, 0.2 to 1.5% Mn, 0.3 to 2.0% Cr, 0.1 to 2.0% Ni, 0.015 to 0.050% Al and 0.003 to 0.015% N. The ranges of elements as presently claimed which do not overlap the ranges taught by Nakamura et al would have been obvious because the prior art range is close enough that one skilled in the art would have expected it to have the same properties, see MPEP 2144.05.

The claim is directed to a "part" of an antifriction bearing having an inner ring, an outer ring and a rolling element. Nakamura et al do not expressly teach that the steel is

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used as a part of an antifriction bearing, however, the bearing steel of Nakamura et al would have been expected by one of ordinary skill in the art to be used to make a part of an antifriction bearing.

The claim states "having a structure subjected to tempering after quench hardening or carbonitriding, wherein the hardness after said tempering is at least HRC 58 and the maximum carbide size is not more than 8 μm ". Nakamura et al do not expressly teach that the bearing steel is tempered after quench hardening or carbonitriding. However, Takata et al teach (see col 5, lines 3-9) that the bearing steel is quench hardened and then tempered. The steps of quenching followed by tempering are conventionally applied to steels to produce a desired microstructure and properties. Therefore, it would have been obvious to one of ordinary skill in the art to have applied the conventional processing steps of quenching and tempering ^{*as disclosed by Takata et al*} to the bearing steel of Nakamura et al because quenching and tempering produces desired microstructure and properties. With respect to the properties of hardness and carbide size, the alloy composition taught by Nakamura et al overlaps the alloy composition recited in the claims and is processed by an identical process of quenching and tempering, therefore, one of ordinary skill in the art would have expected that the products taught by the reference would inherently have the same hardness and carbide size as claimed.

"Where the claimed and prior art products are identical or substantially identical in structure or composition or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing they are not.' In re Spada, 15 USPQ2d 1655, 168 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best 195 USPQ 430, 433 (CCPA 1977)." See MPEP 2112.01

Regarding claim 2, Nakamura et al teach (see English abstract) that the bearing steel may optionally contain 0.01 to 0.30% V or less than 1.0% Mo.

5. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takata et al (US 4,642,219) in view of Ochi et al (US 5,705,124).

Takata et al teach (see abstract) a bearing steel which contains, by weight, 0.7 to 1.1% C, 0.15 to 1.6% Si, 0.15 to 1.15% Mn, less than 0.010% P, less than 0.002% S, 0.5 to 1.6% Cr, less than 0.015% Al, less than 0.0015% Ti, less than 0.0006% O, less than 0.005% N and the balance iron.

Takata et al do not teach that the bearing steel contains 0.1 to 3.0% Ni.

Ochi et al teaches a bearing steel that is similar in composition to the bearing steel of Takata et al. Ochi et al teach (see col 5, lines 14-23) that Ni can be added at 0.1 to 2.0% to bearing steels for the purpose of improving the hardenability and extending the life of the bearing steel.

Therefore, it would have been obvious to one of ordinary skill in the art to have added Ni as taught by Ochi et al to the bearing steel of Takata et al because Ochi et al teach that Ni improves hardenability and extends the life of bearing steels.

The claim is directed to a "part" of an antifriction bearing having an inner ring, an outer ring and a rolling element. Takata et al in view of Ochi et al do not expressly teach that the steel is used as a part of an antifriction bearing, however, the bearing steel of Takata et al in view of Ochi et al would have been expected by one of ordinary skill in the art to be used to make a part of an antifriction bearing.

The claim states "having a structure subjected to tempering after quench hardening or carbonitriding, wherein the hardness after said tempering is at least HRC 58 and the maximum carbide size is not more than 8 μm ". Takata et al teach (see col 5, lines 3-9) that the bearing steel is quench hardened and then tempered. Takata et al teach (see Table 2) that the non-metallic inclusions (i.e.-oxides, nitrides, carbides) have average length of 1.0 μm for the inventive examples. With respect to the property of hardness, the alloy composition taught by Takata et al in view of Ochi et al overlaps the alloy composition and the processing method recited in the claims, therefore, one of ordinary skill in the art would have expected that the products taught by the reference would inherently have the same hardness as claimed.

Regarding claim 2, Takata et al teach (see abstract) optionally adding 0.05 to 0.50% Mo and 0.05 to 0.30% V.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ochi et al (US 5,725,690 and Japanese equivalent JP 08-144014 A) teach a bearing steel similar to the present invention, except that it includes Mg, and the Mo is not optional; and,

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-F 8:15am-4:45pm.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
Art Unit 1742

hdw
August 22, 2001

ROY KING 
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700